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EXTENDED STUDIES ON FOSSILS FROM THE RUSSELL ISLANDS

James Conkin

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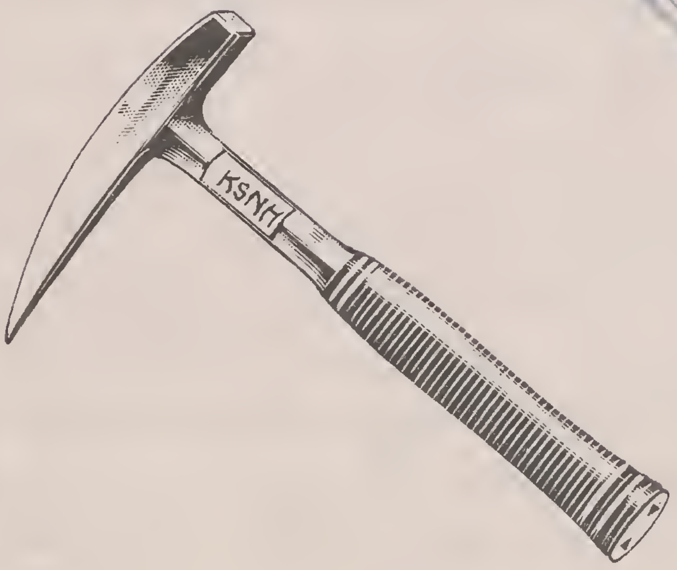

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EXTENDED STUDIES ON FOSSILS FROM THE SOLOMON ISLANDS

By James Conkin

ABSTRACT: This paper is a revision of the writer's 1948 paper in THE KENTUCKY NATURALIST, vol. 3, pp. 21-23, on the "Fossils from the Russell Islands". A revised faunal list is offered for the coralline deposit. By a restudy of the fauna of the coral deposit on the Island of Pavuvu in the Russell Group of the Solomon Islands, the geologic age of the deposit is found to be Pleistocene-Recent, and more probably Recent.

Since H. B. Guppy's work on the Solomon Islands in the early 19th Century little has been publishedon these islands. Most subsequent authors writing on the Solomons have added little or nothing to the observations of Guppy. W. M. Davis (1928, p. 398) quoting Guppy describes Pavuvu as a "dissected and well submerged cone, for it is now resolved into a group of small reefless islands. The absence of reefs here suggests that the submergence of the dissected cone was rapid."

Guppy considered the islands of the Solomons to possess raised coral reefs, but differed with Darwin as to their genesis. The present writer will not enter into a discussion on the theories of coral reef formation. The writer can agree that the Russells are the results of the dissection and submergence of basic igneous intrusives and vulcanics situated in an unstable belt of mountain building. The red soil (the result of the disintegration of ferro-magnesium rocks) and the andesitic appearing rocks partly composed of hornblende phenocrysts are evidence for an igneous origin of the islands. There is, however, a coral deposit covering much or all of the lower parts of the island, which extends to the edge of the sea shore where it merges with the living corals, and presumably the present corals grow on the coralline rock as a substratum. The writer during his tour of duty with the

Marine Corps was stationed on Pavuvu during the winter of 1944; he did not, however, have the opportunity to go far into the mountainous area of the island. As far as he penetrated into the jungle, about a mile from the sea shore, coral deposits were present in outcrop. At a coral quarry the calcareous sediments were 50 feet thick.

The sediment itself is a very pure calcareous limestone having a small per cent of insoluble residue. The insoluble residue consists chiefly of pyrite, followed in abundance by quartz and muscovite plus probably weathered ferro-magnesium fragments.

As to the degree of induration, the rock is easily dug with a pick and is porous. The original material of the fossil shells has been replaced by calcite. Chemical tests on the shells of the genus *Ostrea* and other specimens show no aragonite now present; the periostracum is not present and the shells exhibit no nacreous or porcellaneous appearance; good evidence of replacement is thus presented.

The general aspect of the fauna is Recent, since to the writer's knowledge no form is extinct; the forms buried in the rock differ little or not at all from the ones found in the present sea, except the fossil forms are replaced and of course imbedded in the rock.

Some readers may disagree with the fossil concept as used in this paper, on the grounds that to be a fossil a form must be Pleistocene or older in age. Appealing to the etymology of the word one finds that a fossil is something that is "buried". Of course a fossil should have a considerable age generally, but if a certain species of animal or plant had become extinct 10,000 years ago, then the remains or any vestige of the form would, in the writer's definition, be a fossil. Where to draw the line in the illusive concept of what is and what is not a fossil is a subjective matter, depending on each one's own definition of the term "fossil". This subjectiveness coupled with the thought that we are most likely still in the icy grip of the Pleistocene (an interglacial stage though it be), leads the writer to feel that further discussion on the subject would yield us little.

The following is a revised faunal list for the coral deposit on the Island of Pavuvu in the Russell group of the Solomon Islands:

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SARCODINA:	*Amphistegina quoii*
ANTHOZOA:	*Flabellum* *Fungia*
ECHINOIDEA:	Unidentified test of a sea urchin.
PELECYPODA:	*Barbatia* *Corbicula* *Ensis* *Lucina* *Ostrea* *Pecten* *Tridacna*
GASTEROPODA:	*Bulla* *Cassis* *Conus* *Cypraea* *Strombus* *Tenebras*
CRUSTACEA:	Cheliped.

DISCUSSION OF THE FAUNA

Considering recent investigations upon the fauna, the writer's previous contention as to the age of the calcareous sediments on Pavuvu (Conkin, 1948, p. 23) should be altered. The fossil evidence resolves itself about two organisms: the foraminiferan *Amphistegina quoii* (Pl. II) and the coral *Fungia* (Pl. III). The geologic range of *Amphistegina quoii* is Recent (Ellis and Messina, 1940). *A. quoii* has been discussed and figured by Yabe and Hanzawa (1925, p. 48) from the Raised Coral-Reef Formation of the Ryuku Islands and Formosa. These two workers lean toward a pre-Pleistocene age for the formation although it is thought by many to be Pleistocene. The genus *Fungia* is Miocene-Recent (Vaughn and Wells, 1943, p. 140) in age. Specific identification of *Fungia* was not attempted because of the illusive nature of the species concept in this genus, and also because of the writer's incomplete knowledge of the fungids.

CONCLUSION

The conclusion reached as to the age of the calcareous sediments are based primarily upon five considerations:

1. Range of *Amphistegina quoii.*
2. Inudration of the coral.
3. The degree of replacement of the fossils contained in the coral as well as the calcareous coral itself.
4. General Recent aspect of the fauna.
5. Degree of elevation above sea-level of the coral deposits.

Having given the above criteria their due consideration, the writer concludes that the coral deposits cannot be older than Pleistocene - Recent in age. More particularly, in the writer's opinion, the facts themselves lean toward a Recent age for the deposit.

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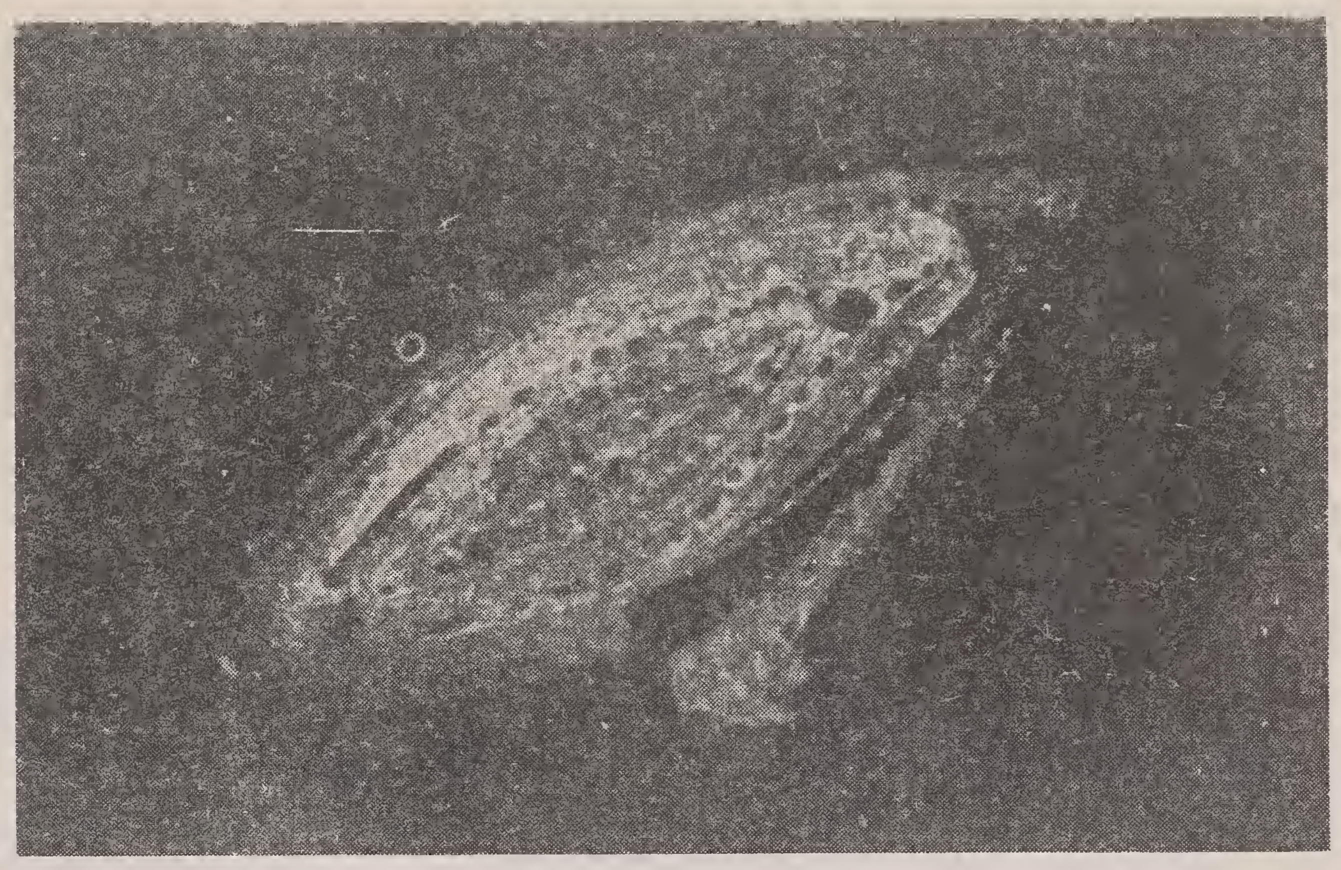
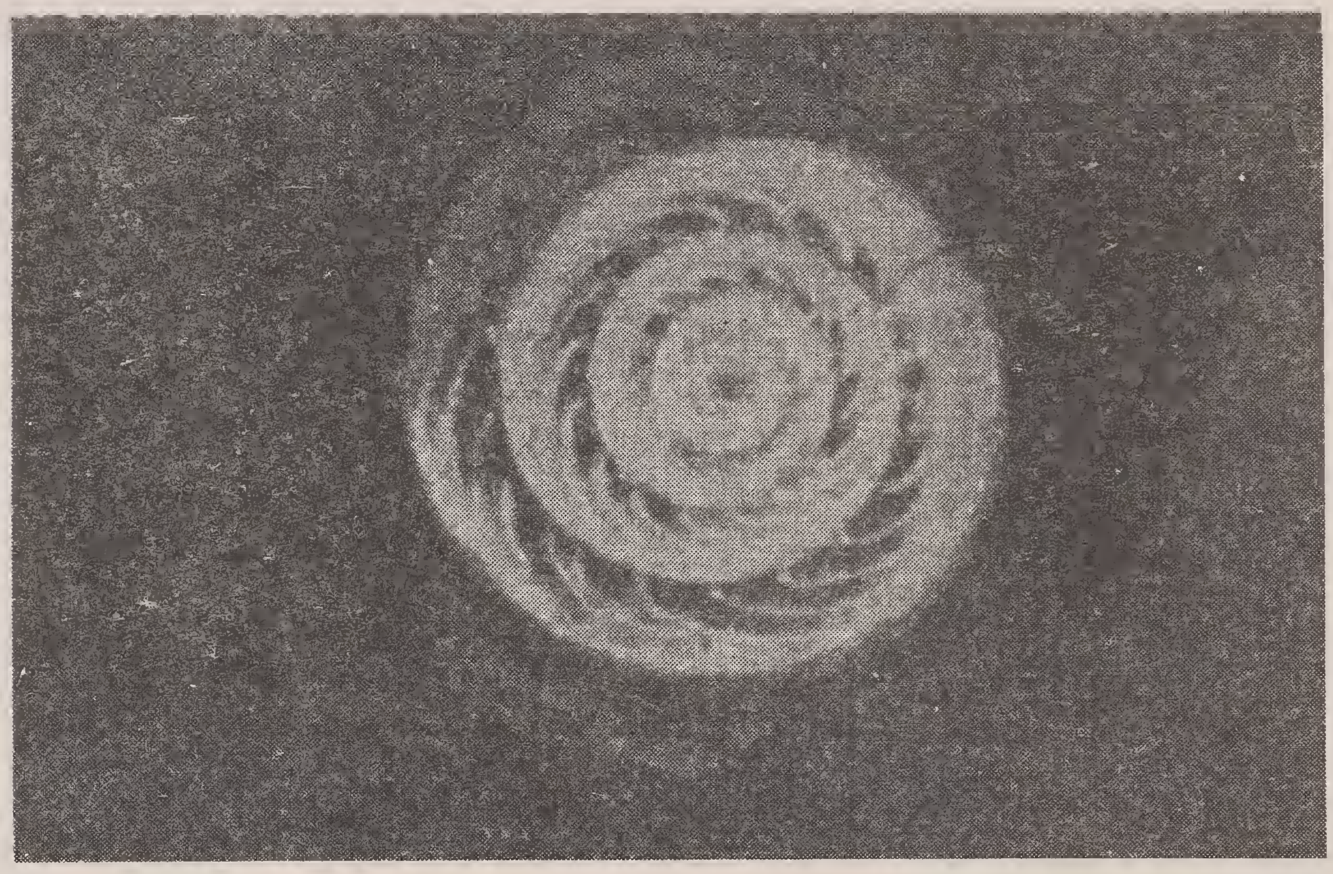
PLATE II

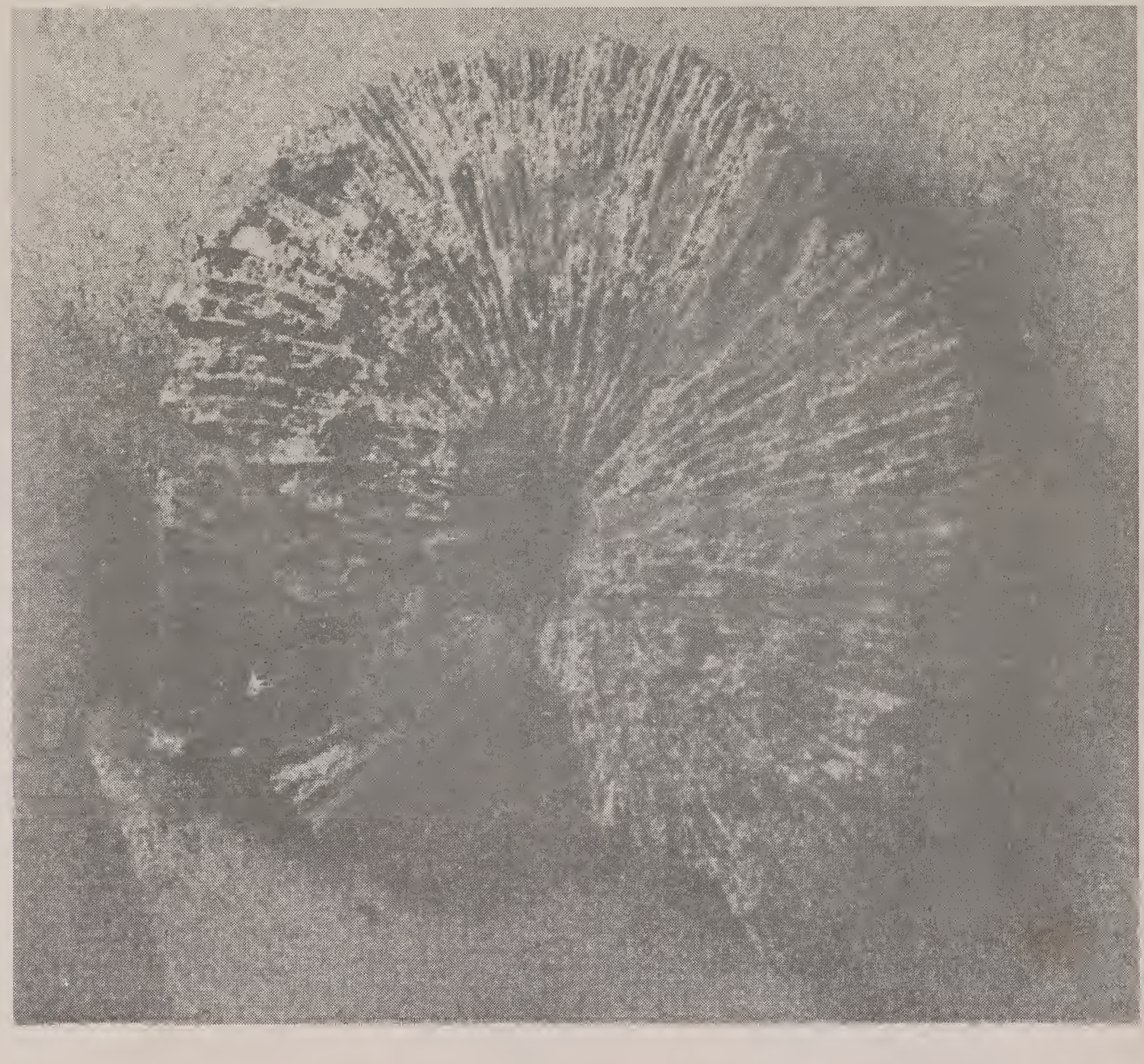


Amphistegina quoii
Axial section x30



Amphistegina quoii
Saggital section x27

PLATE III



Fungia sp. x1.

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